

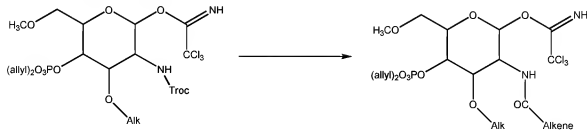
REMARKS

Claims 120-123, 125-126, 128, 130-133, 135-136 and 138 were pending. No claim amendments have been made. Accordingly, after entry of the present amendment, claims 120-123, 125-126, 128, 130-133, 135-136 and 138 will remain pending. *No new matter has been added.* Applicant reserves the right to pursue canceled or amended subject matter in one or more continuing or divisional applications.

Claim Rejections – 35 U.S.C. 103

Claims 120-123, and 130-133 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Rossignol *et al.* (U.S. Patent No. 6,184,366) in view of Sanghvi *et al.* (U.S. Patent No. 6,809,195). Specifically, the Office Action states that “[i]t would have been obvious to one of ordinary skill in the art at the time of the invention to carry out the synthesis carried out by Rossignol *et al.* using a different order of synthetic steps that would result in the claimed intermediates, using any of the methods described by Sanghvi *et al.* to oxidize the phosphorus atom...” Applicant respectfully traverses the foregoing rejection for the following reasons.

The Examiner has provided Figure 1 on page 6 of the Office Action as a schematic representation of the synthesis provided in Rossignol *et al.*. As a preliminary matter, Applicant respectfully notes that Rossignol *et al.* does not teach the final step of Figure 1. *I.e.*, Rossignol *et al.* does not teach or suggest:

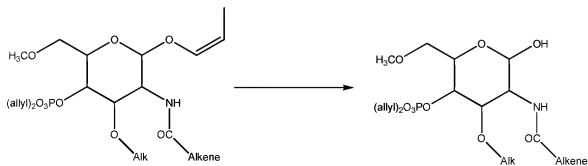


Applicant argues that, not only are there no intermediates in Rossignol *et al.* having a structure similar to the structure produced above, there is also no reasonable expectation that such a compound could be made from the compound depicted on the left in the figure above. The trichloro acid amidate is a leaving group which leaves a carbonium ion at this position. This

trichloro acid amidate group would not survive the zinc/acetic acid reaction used to remove the Troc group.

The Examiner has also provided Figure 2 on page 7 of the Office Action as a theoretical alternate order to react the compounds of Rossignol *et al.*. Applicant submits that the Examiner is using improper hindsight reasoning in generating Figure 2. The Applicant is aware that “[a]ny judgement on obviousness is in a sense necessarily a reconstruction based on hindsight reasoning...” (MPEP §2145(X)(A), citing *In re McLaughlin* 443 F.2d 1392, 1395 (CCPA 1971)). However, Applicant respectfully submits that such reasoning properly “takes into account *only* knowledge which was within the level of ordinary skill in the art at the time the claimed invention was made and *does not include* knowledge gleaned only from applicant’s disclosure...” (Id.) Impermissible hindsight “must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art.” (MPEP §2142)

Applicant respectfully submits that, without the teachings of the present invention, there would be no reason for a person of ordinary skill in the art to modify Rossignol *et al.* in the manner shown in Figure 2 presented on page 7 of the Office Action. Applicant respectfully submits that Rossignol *et al.* provides an overall synthetic design, with each step and each reagent precisely placed so that specific groups are added under specific conditions to a specific moiety on the core saccharide. Applicant further submits that a person of ordinary skill in the art at the time of filing would have known that steps in such a process can not arbitrarily be swapped, at least because each one may produce a downstream reaction which would be completely incompatible with the overall synthetic design. For example, and specifically with regard to Figure 2, a person of ordinary skill in the art at the time of filing of the present invention would have found the success of the step:



unexpected because the amide group can react with the unprotected –OH to form a five-membered ring (particularly in light of the acidic conditions utilized in the above reaction). Such a five-membered ring product would be useless downstream in the synthetic process. Accordingly, Applicants submit that a person of ordinary skill in the art at the time of filing would not have a reasonable expectation of success in modifying the teachings of Rossignol *et al.* in the manner shown in Figure 2, and thus would have no reason to do so.

The Examiner has indicated that the present invention would also be obvious in view of the combination of Rossignol *et al.* and Sanghvi *et al.*. With regard to this combination, Applicant respectfully reiterates that Rossignol *et al.* provides an overall synthetic design, with each reagent precisely placed so that specific groups are added under specific conditions so as not to effect the intermediate or any downstream processes. Applicant submits that a person of ordinary skill in the art at the time of filing would know that reagents in such a process can not arbitrarily be changed (*e.g.*, with the reagents taught in Sanghvi *et al.*), at least because new reagents may not produce the desired result. Although Sanghvi *et al.* provides a list of oxidizing compounds, there is no indication that such compounds would oxidize the specific phosphorous compound utilized in the synthesis of the compounds of the present invention. Additionally, there is no indication that the oxidizing compounds listed in Sanghvi *et al.* would not have any effect on the saccharide intermediate or a downstream product. Applicant submits that these statements are particularly compelling in light of the Declaration of Dr. Foy submitted on July 2, 2008 (hereinafter “the Foy Declaration”).

The Foy Declaration not only provides evidence of the unpredictability of using Oxone or Phosgene, but also provides evidence of the general unpredictability of the chemical syntheses utilized to make the intermediates of the present invention. In fact, the Foy declaration states broadly that it was “unexpected at the time the claimed invention was made that this improvement [*i.e.*, synthesis via the claimed intermediates] would lead to a feasible process. For example, when this improvement was suggested to the Process Research department by the inventor of the above-identified application, the general belief within the department was that *such an improved process would not be possible...*” (see Foy Declaration, paragraph 6). More specifically, the Foy Declaration states that “a person of ordinary skill in the art would have found it unexpected that the alkanoyl groups could act as protecting groups, and that the

compounds protected with alkanoyl groups would be suitable as intermediates in the processes described herein. This belief was based, at least in part, on the potential reactivity of the alkanoyl-protected intermediates with *reagents utilized in the synthesis* of the disaccharide compound shown in paragraph 7..." (see Foy Declaration, paragraph 12). Accordingly, it is Applicants contention that the Foy Declaration overall provides evidence of the general unpredictability of the syntheses utilized to form the intermediates and thus the Foy Declaration would be effective to remove the rejection of the claims over the combination of Rossignol *et al.* and Sanghvi *et al.*.

Accordingly, Applicant respectfully submits that a person of ordinary skill in the art would not have been motivated to make the compounds of the present invention, even in view of the combination of Rossignol *et al.* and Sanghvi *et al.*. As the Examiner knows, "in order to find a prima facie case of unpatentability in such instances [i.e., in chemical cases], a showing that the 'prior art would have suggested making the specific molecular modifications necessary to achieve the claimed invention' was also required..." and that "...in cases involving new chemical compounds, *it remains necessary to identify some reason that would have led a chemist to modify a known compound in a particular manner* to establish prima facie obviousness of a new claimed compound." (Takeda Chemical Industries, Ltd. v. Alphapharm PTY., Ltd. 83 U.S.P.Q.2D 1169 (Fed. Cir. 2007)). Thus, Applicant respectfully submits that the new chemical compounds claimed herein are also not obvious in light of the combination of Rossignol *et al.* and Sanghvi *et al.*.

In view of the above, Applicant respectfully requests withdrawal of the rejection under 35 U.S.C. §103(a) and reconsideration of claims 120-123 and 130-133.

Claims 125, 126, 128, 135, 136 and 138 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Rossignol *et al.* (U.S. Patent No. 6,184,366) in view of Greene *et al.* ("Protective Groups in Organic Synthesis). Specifically, the Office Action states that "[i]t would have been obvious to one of ordinary skill in the art at the time of the invention to carry out the synthesis carried out by Rossignol *et al.* using a different order of synthetic steps that would

result in the claimed intermediates, using any of the methods described by Greene *et al.* to introduce the allyl carbonate group.”

Applicant respectfully traverses the present rejection for the same reasons as provided above with regard to the rejection over Rossignol *et al.* in view of Sanghvi *et al.*. Specifically, Applicant submits that, although Greene *et al.* provides a list of methods for adding an allyl carbonate, there is no indication that such methods could be utilized to specifically add an allyl carbonate to a saccharide compound of the present invention. Additionally, there is no indication that the reagents listed in Greene *et al.* (and the references cited therein) would not have any effect on the saccharide intermediate or a downstream product. In light of these statements, as well as the comments above regarding the Foy Declaration, it is Applicant’s contention that the Foy Declaration would be effective to remove the rejection of the claims over the combination of Rossignol *et al.* and Greene *et al.*.

Accordingly, Applicant respectfully submits that a person of ordinary skill in the art would not have been motivated to make the compounds of the present invention, even in view of the combination of Rossignol *et al.* and Greene *et al.*, and that the new chemical compounds claimed herein are also not obvious in light of the combination of Rossignol *et al.* and Greene *et al.*.

In view of the above, Applicant respectfully requests withdrawal of the rejection under 35 U.S.C. §103(a) and reconsideration of claims 125, 126, 128, 135, 136 and 138.

CONCLUSION

In view of the above, Applicants believe the pending application is in condition for allowance. The Examiner is invited to contact the undersigned with questions or comments with regard to the present application.

Dated: March 9, 2009

Respectfully submitted,

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